

## WHAT IS CLAIMED IS:

1. An image processing device for processing an image data, wherein the image data includes a plurality of vertical lines, wherein each of the vertical lines includes a plurality of pixel data, the image processing device comprising:

at least one buffer unit for buffering a plurality of superpixels, wherein all pixel data of each superpixel belong to the same vertical line; and

at least one processing unit, which is coupled to the at least one buffer unit, for sequentially processing the superpixels according to an image processing procedure.

2. The image processing device according to claim 1, wherein the image processing procedure can be one of the following: an image data scaling procedure, an image enhancement procedure, a color processing procedure, a halftone processing procedure, a filtering procedure, and an data formatting procedure with respect to specific I/O apparatuses.

3. The image processing device according to claim 1, wherein the at least one buffer unit receives the image data of at least one of the superpixels according to a first sequence, and outputting the image data of the superpixel according to a second sequence.

4. The image processing device according to claim 3, further comprising a buffer unit control circuit for controlling the image data of the superpixel to be outputted according to the second sequence.
5. The image processing device according to claim 1, wherein the superpixels comprises a first superpixel and a second superpixel, both of which include a first pixel data.
6. The image processing device according to claim 1 being installed in a scanner.
7. The image processing device according to claim 1 being installed in a multi-function peripheral (MFP).

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